APPENDIX B

TRAVEL FORECASTING ASSUMPTIONS FOR 2001 REGIONAL TRANSPORTATION PLAN

Travel Forecasting Assumptions 2001 Summary
2001 Update of Regional Transportation Plan

This report documents the travel forecasting assumptions for the 2001 Regional Transportation Plan which now extends out to the year 2025. In preparing these travel forecasts, MTC uses four basic sets of assumptions:

- Pricing Assumptions;
- Travel Behavior Assumptions;
- Demographic Assumptions; and
- Network Assumptions.

Demographic and network definition assumptions are not included in this memo. The basic demographic assumption is that the RTP travel forecasts will be based on the socio-economic/land use forecast series *Projections 2000,* developed by the Association of Bay Area Governments (ABAG).

Pricing assumptions include projected parking prices; gasoline and non-gasoline auto operating costs; fuel economy; bridge tolls; and transit fares.

Travel behavior assumptions include trip peaking factors, vehicle occupancy factors, and estimates of interregional commuters.

Additional travel forecasting methodology issues are addressed in this summary. These are special methodological issues related to air quality and mobile source emissions inventories. The methodology issues include:

- Commercial Vehicle Methodology;
- Speed Post-Processing Methodology;
- Distribution of VMT by Speed Methodology; and
- Adjustment of Regional VMT and Trips.

I. Pricing Assumptions

A. Parking Costs

The MTC demand models were estimated using nominal, or posted parking prices as opposed to actual parking prices. Actual parking prices would be the average parking price paid by a consumer, weighted by those who are subsidized by their employer and those who are not subsidized by their employer. For peak period parking cost, the monthly posted parking price is divided by 22 days per month to derive an average workday parking cost. The average workday parking cost is then divided by 8 hours to derive an average peak hour parking cost per hour in 1990 cents. In the home-based work mode choice model application, the per hour charge is multiplied by 8 hours, then divided by 2, to derive a per vehicle trip charge. Next, the per vehicle trip charge is divided by the vehicle occupancy so that parking costs are equally distributed between vehicle drivers and passengers.

Base years 1990 and 1998, and forecast years 2000, 2005, 2010, 2020 and 2025 peak hour parking costs, by the MTC 1099 zone system, are shown in Table 1. Off-peak per hour parking costs – 1990, 1998, 2000, 2005, 2010, 2020 and 2025 – are shown in Table 2.

The MTC assumption for parking costs is that they will increase, in real terms, between one and two percent per year between 1990 and 2025. The core of downtown Berkeley and San Jose are assumed to grow by two percent per year between 1990 and 2025; in all other areas, by one percent.

MTC staff periodically inventory parking garages throughout the Bay Area to monitor trends in parking prices. The most recent update to this inventory was conducted Fall 2000.

B. Auto Operating Costs

The MTC travel demand models are based on non-linear auto operating costs which vary according to trip speed and distance. As speed increases, the fuel consumption rate (gallons per mile) decreases linearly. As distance increases, the share of "cold start" fuel consumption decreases. This internal model is used to derive trip-specific fuel economy (miles per gallon) which is multiplied by the per gallon gas price to derive per trip gasoline operating cost. A constant non-gasoline operating cost per mile is multiplied by trip distance to get per trip non-gas cost. Total auto operating cost per trip is the sum of the gasoline cost per trip plus the non-gasoline cost per trip plus any bridge tolls or parking charges. Details on the auto operating cost model are included in the BAYCAST Users Guide.

The MTC auto operating cost model is based on work conducted by Cambridge Systematics, Inc., as part of the *Urban Transportation Energy Conservation* study, published in 1978 (known as "UTEC"). The UTEC models were also used to derive auto operating costs for the Southern California Association of Governments' new set of travel demand models.

The basic inputs to the BAYCAST model system, in terms of auto operating cost, are gasoline price (in 1990 constant dollars); the fuel correction factor (to represent fleet turnover and more fuel efficient vehicles); and the non-gasoline operating cost (in 1990 cents per mile.) Data on historical, 1990 to 1998, and assumed future year auto operating costs are detailed in Table 3 and Figures 1 and 2.

The notes to Table 3 indicate some of the major assumptions going into these auto operating cost forecasts. For gasoline prices, MTC uses future gas price estimates provided by the California Energy Commission (CEC) and the US Department of Energy's Energy Information Administration (EIA). These agencies predict gas prices in the range of $1.09 per gallon (CEC) to $1.38/gallon (EIA) (in 1990 constant dollars.) The current assumption for years 2005 through 2025 is that gas prices will remain at their 2000 level, that is, $1.83 per gallon in current (2000) dollars.

MTC is assuming no change in fuel economy relative to 1990. This respects the overall fuel economy trend as established by the US Energy Information Agency (EIA) in their "Household Vehicles Energy Consumption Report" (September 1997.) The EIA found no significant increase in overall passenger vehicle fuel economy between their national surveys conducted in 1988 and 1994. Overall this means that we are projecting that total auto operating cost per mile (gasoline + non-gasoline) will remain at 10.22 cents per mile between 2000 and 2025 (all in 1990 constant dollars).

A question was raised about the differential gas prices in the San Francisco versus Los Angeles regions. Table 9 shows the ratio of San Francisco to Los Angeles gas prices between January 1995 and October 1997. Over this time period, San Francisco gas prices have been, on average, two percent higher than Los Angeles gas prices. This is not a significant difference, so the recommendation is to use the CEC statewide gas price forecast unadjusted for Bay Area price differential.

The other key assumption is that non-gasoline operating cost (maintenance and repair, motor oil, parts, accessories) is 40 percent of total auto operating costs. This 40 percent figure is based on US Bureau of Labor Statistics data on consumer expenditures (see Table 4 of the MTC report: *Consumer Price Indices: Bay Area & U.S. Cities: 1950-1999.*) In a typical household, between five and six percent of a household's expenditures are related to auto operating costs. Gasoline cost has fluctuated from 55.6 percent to 73.5 percent of total auto operating costs over the past twenty years.

Auto ownership costs, which comprise around 10.2 percent of the average household's budget, are not used in determining trip running, or variable costs. Auto ownership costs includes the cost of new or used vehicle purchasing and financing, insurance premiums, and vehicle registration and licensing fees. These fixed costs of auto ownership are more important in determining the number and quality of vehicles to own or lease. Given the difficulty in projecting automobile quality and costs, household income is used as a surrogate in predicting auto ownership levels.

C. Bridge Tolls

Under recently passed legislation (AB1171, statutes 2001, Chapter 907) Bay Area bridge tolls are scheduled to remain at $2.00 for the duration of the long-range planning period (Table 4, Figure 3). Given an inflation assumption of 3 percent per year, a year 2025 toll of $2.00 is equivalent to 70 cents in 1990 constant dollars (Table 10). This MTC bridge toll assumption is consistent with the financial forecasting assumptions used in projecting bridge toll revenues.

Note that discounted commute tickets were phased out with the introduction of FASTTRAK (electronic toll collection) in 2000 and 2001. FASTTRAK tolls were also discounted by 15 percent, but these FASTTRAK discounts will be discontinued in early 2002.

The Golden Gate Bridge District has also introduced FASTTRAK, and has also eliminated commute discounts as of June 2001.

All Bay Area bridges had a standard automobile toll of $1.00 per crossing in 1990. Commute ticket booklets offer 15 to 32 percent discounts off of the $1.00 toll, as follows:

1990 Base Year Bridge Tolls

Bay Area Bridges	Auto Toll	Commute Tickets	Commuter Toll ($/ticket)	Free Toll for SR3+ During Peak Period?
Antioch	$1.00	$27 / 40 tickets	$0.68	No
Benicia/Martinez	$1.00	$27 / 40 tickets	$0.68	No
Carquinez	$1.00	$27 / 40 tickets	$0.68	No
Richmond/San Rafael	$1.00	$34 / 40 tickets	$0.85	Yes (since 10/89)
Golden Gate	$1.00	$20 / 23 tickets	$0.87	Yes
SF/Oakland Bay	$1.00	$34 / 40 tickets	$0.85	Yes
San Mateo/Hayward	$1.00	$34 / 40 tickets	$0.85	Yes
Dumbarton	$1.00	$34 / 40 tickets	$0.85	Yes

For the state-owned bridges for FY 1989/90, MTC staff calculated an average auto toll weighted on commuter ticket usage and full toll usage, as follows:

Computation of Average Auto Toll, 1989/90

Bay Area Bridges	Commuter Tickets	Total Autos & Trailers	Tickets as % of Total	Average Auto Toll
Antioch	225,569	1,605,516	14%	$0.96
Benicia/Martinez	3,696,160	13,643,902	27%	$0.91
Carquinez	4,724,623	17,585,673	27%	$0.91
Richmond/San Rafael	1,257,179	8,428,199	15%	$0.95
SF/Oakland Bay	4,227,393	36,521,920	12%	$0.96
San Mateo/Hayward	1,845,246	12,131,171	15%	$0.95
Dumbarton	2,085,757	8,381,841	25%	$0.92

The average toll for the Golden Gate Bridge was 94 cents per revenue vehicle between July and December 1990 (source: Golden Gate Bridge District. Comparative Record of Traffic for the Month of December 1990).

For purposes of travel forecasting, the one-way toll is halved so that both directions on every bridge are allocated one-half of the total average toll. This is a technical necessity to counter the toll collection direction bias.

Note that free tolls for three-or-more person carpools were instituted on the Carquinez Strait bridges (Carquinez, Benicia/Martinez and Antioch) in October 1995. This is the only change in toll assumptions from the 1990 base year. The final tolls used in the 1990 model simulation are as follows:

Bridge Tolls for Travel Forecasting: 1990 Base Year

Bay Area Bridges	Drive Alone & Carpool-2	3+ Carpool	Off-Peak Tolls
Antioch	$0.48	$0.48 / $0.00	$0.48
Benicia/Martinez	$0.46	$0.46 / $0.00	$0.46
Carquinez	$0.48	$0.48 / $0.00	$0.48
Richmond/San Rafael	$0.48	$0.00	$0.48
Golden Gate	$0.47	$0.00	$0.47
SF/Oakland Bay	$0.48	$0.00	$0.48
San Mateo/Hayward	$0.48	$0.00	$0.48
Dumbarton	$0.46	$0.00	$0.46

D. Transit Fares

Year 2001 transit fares are used for all future year forecasts (this means that fares will increase with inflation, so that their real value is not eroded). This assumption is borne out by past fare trends, and reflects the ongoing need for transit operators to periodically adjust their fares to keep up with increased labor costs, maintain their local contribution to capital replacement projects, and pay for increases in the cost of fuel and other supplies.

Base and top end transit fares by Bay Area transit operator, 1970 to 1998, are shown in Table 5.

Historical and projected base fares are charted in Figure 4.1 (Muni), Figure 4.2 (AC Transit), and Figure 4.3 (BART). These charts show base transit fares in current and 1990 constant dollars. These charts also show modest real decreases in transit fares for Muni and BART over the 1995 to 2001 time period. The current dollar fares are based on a three percent per year increase in consumer price indices.

Transit operator fares were revised to incorporate year 2001 fares as of April 2001.

Since the previous conformity determination, transit fares and service levels have changed for numerous operators. The most extensive service level changes were to SamTrans and AC Transit District (Newark, Union City routes). In the previous conformity analysis, 1998 service levels (routes and headways) were used in the baseline networks. In this conformity analysis, 2001 service levels are used. Other service level changes are summarized in Appendix A of the respective conformity analyses.

Table 13 shows the changes in base fares, comparing the previous conformity determination with the current analysis.

II. Travel Behavior Assumptions

A. Vehicle Peaking Factors

The MTC BAYCAST model system is oriented to the production of daily and AM peak period traffic assignments. PM peak period traffic assignments may also be produced from the BAYCAST model system since the basic outputs of the demand models are daily trips by trip purpose and travel mode. In addition, the user can factor the two-hour peak period vehicle trip tables to peak hour tables using peak hour-to-peak period factors by trip purpose.

In contrast to the old MTCFCAST model system, the BAYCAST system directly simulates the number of AM peak period home-to-work vehicle trips, derived from the home-to-work departure time choice model. This is basically a "peak spreading" model that will predict fewer trips in the peak period when congestion levels increase. The standard approach of using fixed shares for all other trip purposes is still needed to augment this new departure time choice model.

Old-style (MTCFCAST) AM and PM peak hour vehicle peaking factors are shown in Table 6.1. New-style (BAYCAST) AM and PM peak period vehicle peaking factors are shown in Table 6.2. The AM peak period is defined as 7:00-9:00 AM. The PM peak period is defined as 4:00-6:00 PM.

As a part of the peak period traffic assignment calibration and validation process, a set of peak period calibration factors were developed. These calibration factors, documented in Table 7, reflect the subregional variation from the regional peaking factors shown in Table 6.2.

Data from the 1990 household travel survey show that the AM peak hour (07:30-08:30) is 58 percent of total vehicle trips occurring in the AM peak period (07:00-09:00) (930,038 vehicle trips / 1,610,546 vehicle trips, from Survey Working Paper #4, page 160, Table 2.3.7A.) So, a rough rule of thumb is to multiply any AM peak (two-hour) period traffic assignment by 0.58 to get a rough estimate of peak hour predicted traffic volumes.

B. Vehicle Occupancy Factors

In the old MTC model system, vehicle occupancy assumptions were important input assumptions to the home-based shop, home-based social/recreation and the non-home-based mode choice model system. These vehicle occupancy assumptions were used, and are still used, for dividing the vehicle trip cost between vehicle drivers and passengers.

All of the new mode choice models either split the number of person trips by vehicle occupancy level (i.e., drive alone, shared ride 2, shared ride 3+), or they split the in-vehicle person trips by vehicle driver and vehicle passenger modes. The issue in auto occupancy forecasting is to ensure that the input occupancy assumption is reasonably consistent with the forecasting output vehicle occupancy rate.

Historical vehicle occupancy rates, from MTC household travel surveys, and BAYCAST predicted vehicle rates for 1990 and 2025, are shown in Table 8.

For the home-based work, home-based shop and home-based social/recreation mode choice models, trips are split by occupancy level (DA, SR2, SR3+). For the three home-based school mode choice models and non-home-based trips, person trips are split into vehicle driver and vehicle passenger. For home-based grade school trips, vehicle driver is not an available mode. This means that the vehicle driver trip for escorting children to school is typically included as a home-based shop/other shared ride 2 or shared ride 3+ trip; the vehicle passenger (the child) is classified as a home-based grade school vehicle passenger trip.

This is awkward, but reflects the nature of travel: where persons in a particular vehicle may be traveling to different activities. For example, the parent's trip purpose is to escort the child to school (home-based shop/other); the child's trip purpose is to attend school (home-based school).

Historical and projected vehicle occupancy factors are shown in Table 8. Note that these are not assumptions per se but model simulations.

C. Interregional Commuters

Assumptions about the number of interregional commuters is key in two respects: first, intraregional home-based work productions and attractions need to be adjusted to reflect in-commuting and out-commuting from and to Bay Area jobs and households; second, interregional vehicle trips are needed to augment the intraregional trips included in the standard BAYCAST travel demand models.

Interregional commuters are estimated by factoring the 1990 Census journey-to-work data file (STP214) using a 46-by-46 matrix that comprises the 34 Bay Area superdistricts and the 12 Bay Area neighbor counties. These sketch planning commuter forecasts are prepared for the years 2000, 2010 and 2020. The factored year 2020 interregional commuter matrix is used as the basis for estimating background interregional year 2025 daily and peak period vehicle trips. This is basically a "sketch planning" effort to complement the formal models used to predict intraregional personal and intraregional commercial travel.

These interregional commuter forecasts are documented in the report "Commuter Forecasts for the San Francisco Bay Area: 1990-2020 (Based on ABAG Projections 2000): Data Summary" published October 2000.

III. Demographic Assumptions

MTC used ABAG's Projections 2000 forecasts for the year 2025 as the horizon year in the 2001 update of the Regional Transportation Plan. ABAG only produced census tract level forecasts out to the year 2020, and provided MTC a set of POLIS 119-district level forecasts for the year 2025. MTC staff combined and allocated tract level forecasts to MTC's 1099 regional travel analysis zone system for all years to 2020, and then used the 119-district level forecasts to factor year 2020 zone-level forecasts to year 2025 estimates.

IV. Network Assumptions

A major part of the RTP update is the definition, coding and simulation of a variety of network alternatives. Alternative definitions are needed for each study alternative, for each of the three types of networks being created: highway networks, transit networks, and pedestrian/bicycle networks. Definition of network alternatives is described in APPENDIX A.

V. Commercial Vehicle Methodology

The MTC BAYCAST commercial vehicle models are based on the truck trip generation models developed for Caltrans and Alameda County as part of the 1992 I-880 Intermodal Corridor Study; and truck trip distribution models documented in the 1996 report "Quick Response Freight Manual" produced by the US Department of Transportation. (Usable truck trip distribution models were not developed for the I-880 Intermodal Corridor Study.)

These truck models are specifically limited to larger trucks of six-or-more tires. There are three sub-purposes to the MTC truck models:

1. "Small Trucks" (two-axle, six-tire vehicles);
2. "Medium Trucks" (three-axle vehicles); and
3. "Combination Trucks" (four-or-more axle vehicles).

Very small, two-axle four-tire commercial vehicles are not included in these truck models or available truck traffic counts. They are assumed to be a portion of the regional "non-home-based" vehicle trips. For the 1990 regional validation non-home-based vehicle driver trips were increased by approximately 10.6 percent to account for these very small commercial vehicles. To reiterate, Caltrans "truck counts" exclude these very small commercial vehicles, but they are included in total daily traffic counts and traffic validation efforts.

In terms of mobile source emissions inventories, the MTC estimates of mobile source emissions are based on the "default" vehicle type and vehicle technology mix assumed by the California Air Resources Board (CARB) in their EMFAC/BURDEN model series. The CARB assumptions on vehicle type mix are based on the same Caltrans databases on truck counts as used by MTC in model validation, only adjusted by CARB staff to conform to the weight-based vehicle classes needed as input to the EMFAC emission factor models.

The following sidebar summarizes the MTC BAYCAST truck trip generation and distribution models:

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Garage-Based Truck Trip Production Models
Two-Axle Truck Productions = 0.011 * MFGEMP + 0.014 * RETEMP + 0.0105 * SEREMP + 0.046 * OTHEMP
Three-Axle Truck Productions = 0.0014 * MFGEMP + 0.00012 * RETEMP + 0.0037 * OTHEMP
Four-+-Axle Truck Productions = 0.0044 * MFGEMP + 0.0027 * SEREMP + 0.0084 * OTHEMP

Garage-Based Truck Trip Attraction Models
Two-Axle Truck Attractions = 0.0234 * TOTEMP
Three-Axle Truck Attractions = 0.0046 * TOTEMP
Four-+-Axle Truck Attractions = 0.0136 * TOTEMP

Non-Garage-Based Truck Trip Production & Attraction Models
Two-Axle Truck Productions and Attractions = 0.0324 * TOTEMP
Three-Axle Truck Productions and Attractions = 0.0039 * TOTEMP
Four-+-Axle Truck Productions and Attractions = 0.0073 * TOTEMP

Where:
MFGEMP = Manufacturing Employment
RETEMP = Retail Employment
SEREMP = Service Employment
OTHEMP = Other Employment (Wholesale Trade, Agriculture/Mining, Other)
TOTEMP = Total Employment

Truck Trip Distribution Models: Gravity Models based on AM Peak Period Travel Time
Two-Axle Truck Trip Distribution Friction Factor:  FFij = exp(-0.08 * TTij)
Three-Axle Truck Trip Distribution Friction Factor:  FFij = exp(-0.1 * TTij)
Four-+-Axle Truck Trip Distribution Friction Factor:  FFij = exp(-0.03 * TTij)
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VI. Speed Post-Processing Methodology

The MTC BAYCAST models were updated and re-validated to a 1998 base year in Spring 2001. A major part of this effort was the validation of traffic assignments to observed daily traffic volumes, and observed AM peak period traffic volumes and speeds, primarily for freeways. The daily and AM peak period traffic volume validation was fairly successful as was the AM peak period freeway speed validation (see report "1998 Base Year Validation of Travel Demand Models for the San Francisco Bay Area" May 2001). On the other hand, the speed validation for expressways and arterials was uniformly too high (too fast), and needed correction. Given the schedule for the 2001 RTP, MTC staff tested several speed post-processing models in order to prepare reasonable estimates of congested system speeds. This section documents the standard set of speed-flow models used in the iterative traffic assignment / mode choice equilibration process, and the post-processing set of speed-flow models used to develop corrections to peak speeds.

The standard set of speed-flow models used in the 1998 base year validation effort includes an MTC variation on the “BPR” curve, and application of the “Akçelik” speed-flow curve documented in previous MTC research. The “MTC Breakdown Curve” is used for freeways and freeway-to-freeway segments; the “Akçelik Curve” is used for expressways, collectors, freeway ramps, major arterials and metered ramps.

The post-processing set of speed-flow models used in the 1998 base year validation and the current set of forecasts includes the identical “MTC Breakdown Curve” for freeways and freeway-to-freeway segments; and modified free-flow speeds and delay parameters for applying the “Akçelik Curve” for expressways, collectors, freeway ramps, major arterials and metered ramps.

For non-freeway segments, the post-processed free-flow speeds are decreased by 15 miles per hour for expressways and by 5 miles per hour for arterials, collectors and ramps. For all non-freeway segments the “Ja” delay parameter in the Akçelik model is calibrated for each facility type / area type combination, based on “critical speeds” (congested speeds at V/C ratio of 1.0) using the “MTC Breakdown Curve.”

In the 1998 validation, this post-processing step significantly improves the arterial/expressway speed validation, from a root-mean-square-error (RMSE) of 12.02 using the standard models and a RMSE of 8.16 using the post-processing adjustments. This research is included in a staff memo (R. Singh to C. Purvis, “1998 Model Validation (RVAL98) – Post-Processor” June 6, 2001.)

MTC assumptions of per lane capacity and free-flow speed are “lookup” tables based on facility type (freeway, major arterial, etc.) and area type (rural, suburban, etc.) Area types are based on “area density,” a combined measure of population and employment density. The standard and post-processing free-flow speeds are shown in Table 11.

As applied in forecasting, the speed post-processing is only applied to arterial and expressway speeds, not to arterial or expressway volumes or VMT. No speed post-processing is done for freeway or freeway-to-freeway segments.

The following box summarizes the MTC standard and post-processing set of speed-flow models.

MTC Standard & Post-Processing Set of Speed-Flow Models

MTC Breakdown Curve (Freeways & Freeway-to-Freeway Facilities)

$$t = t_o * (1 + 0.20 * ((x)/0.75)^6)$$

Akçelik Curve (All Other Facilities)

$$t = t_o + \{0.25 * T * [(x-1) + ((x-1)^2 + (16 * Ja * L^2/T^2))^{0.5}]\}$$

where:

t = average travel time per unit distance (hours/mile)
t_o = free-flow travel time per unit distance (hours/mile)
T = flow period, i.e., the time interval in hours during which an average arrival (demand) flow rate, v, persists
Q = capacity
x = the degree of saturation, i.e., v/Q
Ja = the delay parameter (Expressway = 0.2, Collector=1.2, Freeway Ramp=0.17, Major Arterial=0.4, Metered Ramp=0.2)
Ja = the delay parameter (Post-Processing = calculated for each facility type, area type combination, where: $Ja = (Tc - To)^2 / L^2$ and “Tc” is the critical speed at V/C ratio of 1.0)
L = Link length (miles)

VII. Distribution of VMT by Speed Methodology

An important input to ARB's SF Bay Area EMFAC 2000 mobile source emissions inventory model are county-level files of the share of vehicle miles travel by speed cohort, by time of day. Data is needed for 13 speed cohorts and 6 time-of-day periods (0000-0600, 0600-0900, 0900-1200, 1200-1500, 1500-1800 and 1800-2400).

It is important to note that these speeds are extracted from the post-processed highway assignments and represent average link speeds. They do not represent the range of actual traffic speeds that may be represented in average link speeds. For example, a 25 mile per hour average link speed on a freeway segment is very congested and represents "stop-and-go" conditions with speeds ranging from 0 to 65 miles per hour. The same 25 mile per hour average link speed on an arterial segment may represent a fairly "steady state" speed on a signal coordinated arterial system.

The first step in preparing the VMT-by-speed share file is the preparation of daily traffic assignments. The daily vehicle trips output from the last mode choice model iteration are split into AM-plus-PM peak period vehicle trips, and off-peak period vehicle trips. The peak period vehicle trips, representing the six peak hours, are assigned "all-or-nothing" to the MTC regional highway network using the post-processed congested speeds. The off-peak period vehicle trips, representing the 18 off-peak hours, are also assigned "all-or-nothing" to the same MTC regional highway network using free-flow speeds.

The "loaded" highway network with AM peak period and daily traffic assignment results are then exported into text files and subsequently imported into SAS (Statistical Analysis System) for further post-processing. Daily assignment volumes are then multiplied by link distance to yield vehicle miles of travel (VMT) by link, which are in turn summarized at the county-of-occurrence by speed-cohort level.

There are three components of regional VMT: interzonal VMT that is assigned to highway networks; intra-zonal VMT that is not assigned to highway networks; and terminal distance VMT that is not assigned to highway networks.

Intra-zonal vehicle trips are not assigned to highway networks. The VMT associated with intra-zonal vehicle trips is derived by exporting the intra-zonal vehicle trips and intra-zonal door-to-door distance data into a format compatible with SAS, and for merging with the daily traffic assignment SAS files. SAS routines are then used to apply the "terminal distance" vehicle miles of travel to the inter-zonal and intra-zonal VMT. "Terminal distance" VMT is defined as the amount of travel from the "average household" or "average activity location" in a travel analysis to the nearest highway link represented in the regional highway networks.

Regional totals of VMT by the 13 speed cohorts for 1998, 2010 and 2025 (RTP Project Alternative) are summarized and charted in Table 12. These VMT values include intra-zonal VMT and terminal distance VMT.

Intra-zonal VMT is approximately 6.9 percent of regional VMT in 1998, decreasing to 6.4 percent of regional VMT by 2025.

VIII. Adjustment of Regional VMT and Trips Methodology

The regional vehicle miles of travel (VMT) estimates included in the Regional Transportation Plan Draft Environmental Impact Report (DEIR) are based on unadjusted travel forecasts. The regional vehicle trips are factored by a 1.6228 regional constant to convert "vehicle trips" into "engine starts." The VMT speed share data discussed in the previous section was used for all mobile source forecasts.

For mobile source emission inventories based on SF Bay Area EMFAC 2000, MTC will use the following methodology to adjust regional VMT and vehicle trips.

Regional VMT and engine starts in the proposed 2001 Ozone Attainment Plan will be based on different data sources than in the past. Regional VMT will be based on the ARB estimates of Bay Area VMT for 2000 using the State Bureau of Automotive Repair's (BAR) biennial inspection/maintenance odometer records for registered Bay Area vehicles.

This BAR-based VMT will over-estimate Bay Area VMT by including Bay Area-registered vehicle travel occurring outside the nine-county region. This BAR-based VMT method will also not include Bay Area VMT by non-resident vehicular travel occurring inside the nine-county region. ARB considers that these omissions offset each other, and that the resulting regional VMT level is a conservatively high value. In comparison, MTC estimates 134,256 thousand VMT per weekday in year 2000. The 2000 ARB estimates, based on BAR inspection/maintenance data, show 159,642 thousand VMT per weekday. Because of this significant difference, ARB and MTC have agreed to continue to pursue a process for developing more accurate VMT data.

Regional engine starts in the proposed 2001 Ozone Attainment Plan will be based on ARB's estimate of approximately 6.72 to 6.75 engine starts per vehicle per day. This 6.75 engine starts per day value is based on a small-scale survey of instrumented Sacramento-area vehicles conducted by ARB. This contrasts to other Bay Area, California and National surveys that show trip rates ranging from 2.5 to 3.5 vehicle trips per vehicle per day. For more discussion on this engine starts per vehicle issue, refer to the November 24, 1999 letter from the MTC to the California Air Resources Board. ARB and MTC have also agreed to continue working on this issue.

Table 1
Peak Parking Cost Assumptions by Bay Area Regional Travel Analysis Zones
Peak Period Parking Costs in 1990 cents per hour

City	Neighborhood	Zone	1990 Peak	1998 Peak	2000 Peak	2005 Peak	2010 Peak	2020 Peak	2025 Peak	Percent Growth/Yr
San Francisco	Financial District	1	133	152	160	174	189	224	244	1.7%
San Francisco	Financial District	2	133	152	140	152	166	196	213	1.7%
San Francisco	West of Union Square	3	83	94	150	162	176	206	223	1.6%
San Francisco	Tenderloin	4	83	94	85	92	100	117	126	1.6%
San Francisco	Civic Center	5	67	69	70	71	72	74	75	0.3%
San Francisco	South of Market	6	67	69	65	66	67	69	70	0.3%
San Francisco	South of Market	7	83	94	85	92	100	117	126	1.6%
San Francisco	South of Market	8	100	114	130	141	154	182	198	1.7%
San Francisco	South of Market	9	100	114	145	158	172	203	221	1.7%
San Francisco	Rincon Hill	10	83	96	120	131	143	171	187	1.8%
San Francisco	Moscone Center	11	67	77	90	98	108	129	141	1.8%
San Francisco	South of Market	12	67	77	60	66	72	86	94	1.8%
San Francisco	South of Market	13	67	77	60	66	72	86	94	1.8%
San Francisco	South of Market	14	67	77	70	77	84	100	109	1.8%
San Francisco	South of Market	15	67	77	80	87	96	114	125	1.8%
San Francisco	Embarcadero	16	133	152	140	152	166	196	213	1.7%
San Francisco	Jackson Square	17	133	152	170	185	201	238	259	1.7%
San Francisco	Chinatown	18	133	152	170	185	201	238	259	1.7%
San Francisco	Nob Hill	19	67	76	110	119	129	151	164	1.6%
San Francisco	Polk Gulch	20	50	59	70	78	86	106	118	2.1%
San Francisco	Polk Gulch	21	50	59	70	78	86	106	118	2.1%
San Francisco	Polk Gulch	22	50	59	70	78	86	106	118	2.1%
San Francisco	Russian Hill	23	50	59	60	67	74	91	101	2.1%
San Francisco	Nob/Russian Hill	24	33	42	80	93	108	144	168	3.0%
San Francisco	North Beach	25	133	152	125	136	148	175	191	1.7%
San Francisco	North Waterfront	26	133	152	120	131	142	168	183	1.7%
San Francisco	Telegraph Hill	27	50	63	80	93	108	144	168	3.0%
San Francisco	Fishermans Wharf	28	50	63	80	93	108	144	168	3.0%
San Francisco	North Beach	29	33	42	80	93	108	144	168	3.0%
San Francisco	Russian Hill	30	50	63	80	93	108	144	168	3.0%
San Francisco	Greater Van Ness	33	0	0	55	61	68	83	92	2.1%
San Francisco	Union Street	34	0	0	0	0	0	0	0	2.1%
San Francisco	Lafayette Park	35	0	0	55	61	68	83	92	2.1%
San Francisco	Western Addition	56	0	0	0	0	0	0	0	2.1%
San Francisco	Western Addition	57	50	59	50	55	62	76	84	2.1%
San Francisco	Western Addition	59	50	59	55	61	68	83	92	2.1%
San Francisco	Hayes Valley	60	58	59	55	56	57	58	59	0.3%
San Francisco	Opera & Symphony	61	58	59	70	71	72	74	75	0.3%
San Francisco	Haight-Fillmore	62	25	28	35	38	41	47	51	1.5%
San Francisco	Castro/Mission Dolores	69	0	0	0	0	0	0	0	1.5%
San Francisco	Mission District	71	0	0	0	0	0	0	0	1.5%
San Francisco	Mission District	72	0	0	0	0	0	0	0	1.5%
San Francisco	Mission District	73	0	0	0	0	0	0	0	1.5%
San Francisco	Mission District	74	0	0	0	0	0	0	0	1.5%

Table 1
Peak Parking Cost Assumptions by Bay Area Regional Travel Analysis Zones
Peak Period Parking Costs in 1990 cents per hour

City	Neighborhood	Zone	1990 Peak	1998 Peak	2000 Peak	2005 Peak	2010 Peak	2020 Peak	2025 Peak	Percent Growth/Yr
San Francisco	Inner Mission	75	25	28	35	38	41	47	51	1.5%
San Francisco	Inner Mission	76	25	28	35	38	41	47	51	1.5%
San Francisco	Inner Mission	77	33	37	35	38	41	47	51	1.5%
San Francisco	China Basin	79	47	51	50	53	55	61	64	1.0%
San Mateo	Downtown	181	0	0	0	0	0	0	0	0.0%
San Mateo	Downtown	183	0	0	0	0	0	0	0	0.0%
Redwood City	Downtown	218	0	0	0	0	0	0	0	0.0%
Redwood City	Downtown	219	0	0	0	0	0	0	0	0.0%
Palo Alto	Stanford University	244	0	0	17	17	17	17	17	0.0%
Palo Alto	Downtown	245	0	0	17	17	17	17	17	0.0%
San Jose	Civic Center	397	42	49	18	20	22	27	30	2.0%
San Jose	St. James Park	400	42	49	43	47	52	63	70	2.0%
San Jose	San Jose State Univ.	401	42	49	33	36	40	49	54	2.0%
San Jose	Park Center	402	42	49	45	49	55	67	73	2.0%
San Jose	San Jose Convention Ctr.	410	0	0	29	32	35	43	47	2.0%
Oakland	Upper Downtown	696	50	54	55	58	61	67	71	1.0%
Oakland	Lake Merritt	697	50	54	55	58	61	67	71	1.0%
Oakland	Laney College	698	33	36	30	32	33	37	38	1.0%
Oakland	Downtown	699	50	54	55	58	61	67	71	1.0%
Oakland	Jack London Square	700	33	36	30	32	33	37	38	1.0%
Oakland	North of Downtown	709	50	54	30	32	33	37	38	1.0%
Berkeley	Campus Southside	730	25	29	32	36	39	48	53	2.0%
Berkeley	Campus Southside	731	25	29	32	36	39	48	53	2.0%
Berkeley	UC California Campus	732	25	29	26	28	31	38	42	2.0%
Berkeley	Downtown	733	58	68	59	65	72	87	97	2.0%
Berkeley	North Shattuck	738	58	68	32	35	39	48	52	2.0%

Table 2
Off-Peak Parking Cost Assumptions by Bay Area Regional Travel Analysis Zones
Off-Peak Period Parking Costs in 1990 cents per hour

City	Neighborhood	Zone	1990	1998	2000	2005	2010	2020	2025	Percent Growth/Yr
			Off-Peak Parking (per Hour)							
San Francisco	Financial District	1	500	572	525	571	621	735	800	1.7%
San Francisco	Financial District	2	333	381	230	250	272	322	351	1.7%
San Francisco	West of Union Square	3	333	378	440	476	516	604	654	1.6%
San Francisco	Tenderloin	4	333	378	325	352	381	446	483	1.6%
San Francisco	Civic Center	5	100	102	115	117	118	122	124	0.3%
San Francisco	South of Market	6	100	102	200	203	206	212	216	0.3%
San Francisco	South of Market	7	167	189	190	206	223	261	283	1.6%
San Francisco	South of Market	8	417	477	570	620	675	799	869	1.7%
San Francisco	South of Market	9	375	429	600	653	710	841	914	1.7%
San Francisco	Rincon Hill	10	292	336	390	426	466	557	609	1.8%
San Francisco	Moscone Center	11	250	288	260	284	311	371	406	1.8%
San Francisco	South of Market	12	100	115	165	180	197	236	258	1.8%
San Francisco	South of Market	13	100	115	165	180	197	236	258	1.8%
San Francisco	South of Market	14	100	115	200	219	239	286	312	1.8%
San Francisco	South of Market	15	100	115	350	383	418	500	547	1.8%
San Francisco	Embarcadero	16	167	191	385	419	456	539	587	1.7%
San Francisco	Jackson Square	17	417	477	550	598	651	771	838	1.7%
San Francisco	Chinatown	18	167	191	250	272	296	350	381	1.7%
San Francisco	Nob Hill	19	125	142	400	433	469	549	595	1.6%
San Francisco	Polk Gulch	20	75	89	95	105	117	144	160	2.1%
San Francisco	Polk Gulch	21	75	89	95	105	117	144	160	2.1%
San Francisco	Polk Gulch	22	67	79	75	83	92	114	126	2.1%
San Francisco	Russian Hill	23	67	79	75	83	92	114	126	2.1%
San Francisco	Nob/Russian Hill	24	67	84	80	93	108	144	168	3.0%
San Francisco	North Beach	25	133	153	175	190	207	245	267	1.7%
San Francisco	North Waterfront	26	167	191	300	326	355	420	457	1.7%
San Francisco	Telegraph Hill	27	100	127	330	383	443	596	691	3.0%
San Francisco	Fishermans Wharf	28	167	211	400	464	538	722	838	3.0%
San Francisco	North Beach	29	67	84	330	383	443	596	691	3.0%
San Francisco	Russian Hill	30	67	84	260	301	349	470	544	3.0%
San Francisco	Greater Van Ness	33	0	0	75	83	92	114	126	2.1%
San Francisco	Union Street	34	67	79	75	83	92	114	126	2.1%
San Francisco	Lafayette Park	35	67	79	75	83	92	114	126	2.1%
San Francisco	Western Addition	56	75	89	90	100	111	136	151	2.1%
San Francisco	Western Addition	57	75	89	90	100	111	136	151	2.1%
San Francisco	Western Addition	59	75	89	90	100	111	136	151	2.1%
San Francisco	Hayes Valley	60	67	68	85	86	88	90	92	0.3%
San Francisco	Opera & Symphony	61	67	68	90	91	93	96	97	0.3%
San Francisco	Haight-Fillmore	62	42	47	50	54	58	67	73	1.5%
San Francisco	Castro/Mission Dolores	69	33	38	45	48	52	61	65	1.5%
San Francisco	Mission District	71	42	47	50	54	58	67	73	1.5%
San Francisco	Mission District	72	42	47	50	54	58	67	73	1.5%
San Francisco	Mission District	73	42	47	50	54	58	67	73	1.5%
San Francisco	Mission District	74	42	47	50	54	58	67	73	1.5%

Table 2
Off-Peak Parking Cost Assumptions by Bay Area Regional Travel Analysis Zones
Off-Peak Period Parking Costs in 1990 cents per hour

City	Neighborhood	Zone	1990	1998	2000	2005	2010	2020	2025	Percent Growth/Yr
			Off-Peak Parking (per Hour)							
San Francisco	Inner Mission	75	42	47	50	54	58	67	73	1.5%
San Francisco	Inner Mission	76	42	47	50	54	58	67	73	1.5%
San Francisco	Inner Mission	77	92	103	50	54	58	67	73	1.5%
San Francisco	China Basin	79	92	99	100	105	110	122	128	1.0%
San Mateo	Downtown	181	18	18	20	20	20	20	20	0.0%
San Mateo	Downtown	183	18	18	20	20	20	20	20	0.0%
Redwood City	Downtown	218	8	8	9	9	9	9	9	0.0%
Redwood City	Downtown	219	8	8	9	9	9	9	9	0.0%
Palo Alto	Stanford University	244	0	0	61	61	61	61	61	0.0%
Palo Alto	Downtown	245	0	0	61	61	61	61	61	0.0%
San Jose	Civic Center	397	75	88	113	125	138	168	185	2.0%
San Jose	St. James Park	400	75	88	73	81	89	109	120	2.0%
San Jose	San Jose State Univ.	401	150	176	92	101	112	136	150	2.0%
San Jose	Park Center	402	150	176	194	214	236	288	318	2.0%
San Jose	San Jose Convention Ctr.		0	0	92	101	112	136	150	2.0%
Oakland	Upper Downtown	696	125	135	120	126	133	146	154	1.0%
Oakland	Lake Merritt	697	125	135	120	126	133	146	154	1.0%
Oakland	Laney College	698	83	90	75	79	83	92	96	1.0%
Oakland	Downtown	699	125	135	120	126	133	146	154	1.0%
Oakland	Jack London Square	700	83	90	75	79	83	92	96	1.0%
Oakland	North of Downtown	709	125	135	120	126	133	146	154	1.0%
Berkeley	Campus Southside	730	83	98	96	106	117	143	158	2.0%
Berkeley	Campus Southside	731	83	98	96	106	117	143	158	2.0%
Berkeley	UC California Campus	732	83	98	96	106	117	143	158	2.0%
Berkeley	Downtown	733	67	78	96	106	117	143	158	2.0%
Berkeley	North Shattuck	738	67	78	50	55	61	74	82	2.0%

Table 3
Historical and Projected Auto Operating Costs, 1990 - 2025

Year	Retail Gas Price (Current $)	CPI	Gas Price (1990$)	Fuel Correction Factor	Fuel Economy (MPG)	Gasoline Operating Cost (¢/mi) (1990$)	Non-Gas Operating Cost (¢/mi) (1990$)	Total Auto Operating Cost (¢/mi) (1990$)
1990	$1.241	406.0	$1.241	1.000	21.9	5.67 ¢/mi	3.05 ¢/mi	8.72 ¢/mi
1991	$1.197	423.9	$1.146	1.000	21.9	5.23 ¢/mi	3.43 ¢/mi	8.66 ¢/mi
1992	$1.302	438.1	$1.207	1.000	21.9	5.51 ¢/mi	3.57 ¢/mi	9.08 ¢/mi
1993	$1.299	449.9	$1.172	1.000	21.9	5.35 ¢/mi	3.70 ¢/mi	9.05 ¢/mi
1994	$1.275	457.1	$1.132	1.000	21.9	5.17 ¢/mi	3.45 ¢/mi	8.62 ¢/mi
1995	$1.286	466.0	$1.120	1.000	21.9	5.12 ¢/mi	3.57 ¢/mi	8.69 ¢/mi
1996	$1.434	482.3	$1.207	1.000	21.9	5.51 ¢/mi	3.47 ¢/mi	8.98 ¢/mi
1997	$1.448	493.0	$1.192	1.000	21.9	5.45 ¢/mi	3.63 ¢/mi	9.08 ¢/mi
1998	$1.304	508.9	$1.040	1.000	21.9	4.75 ¢/mi	3.17 ¢/mi	7.92 ¢/mi
1999	$1.514	530.2	$1.159	1.000	21.9	5.29 ¢/mi	3.53 ¢/mi	8.82 ¢/mi
2000	$1.832	553.9	$1.343	1.000	21.9	6.13 ¢/mi	4.09 ¢/mi	10.22 ¢/mi
2005	$2.124	642.1	$1.343	1.000	21.9	6.13 ¢/mi	4.09 ¢/mi	10.22 ¢/mi
2010	$2.462	744.4	$1.343	1.000	21.9	6.13 ¢/mi	4.09 ¢/mi	10.22 ¢/mi
2015	$2.855	863.0	$1.343	1.000	21.9	6.13 ¢/mi	4.09 ¢/mi	10.22 ¢/mi
2020	$3.309	1000.4	$1.343	1.000	21.9	6.13 ¢/mi	4.09 ¢/mi	10.22 ¢/mi
2025	$3.836	1159.7	$1.343	1.000	21.9	6.13 ¢/mi	4.09 ¢/mi	10.22 ¢/mi

Inflation Assumption (2000 - 2025) = *3.0%*

Notes:
1. Future gas price of $1.343 (1990 dollars) is equivalent to $1.83/gallon in 2000 current dollars.
2. Future gas price based on California Energy Commission and US Dept. of Energy Energy Information Administration estimates. These range from $1.09/gallon (CEC) to approximately $1.38/gallon (EIA). EIA estimates range from $1.265 to $1.380 per gallon. CEC gas price estimates are based on base year (2000) gas price of $1.50/gallon in 2000 dollars, and future gas prices remaining at year 2000 levels (e.g., $1.50/gallon for future years.)
3. Future non-gasoline operating cost based on assumption that it is 60% of auto gasoline cost.
4. No change in overall fleet fuel economy is assumed. This respects the no change in fuel economy trend shown by the US Energy Information Agency (EIA) in their "Household Vehicles Energy Consumption Report" (September 1997).
5. Data for year 2000 is based on gas prices and CPI-all items for January through July 2000.
6. Future year estimates prepared 6/21/01.

Figure 1
Auto Operating Costs (Cents/Mile)
Gasoline and Non-Gasoline Operating Costs, 1990-2025

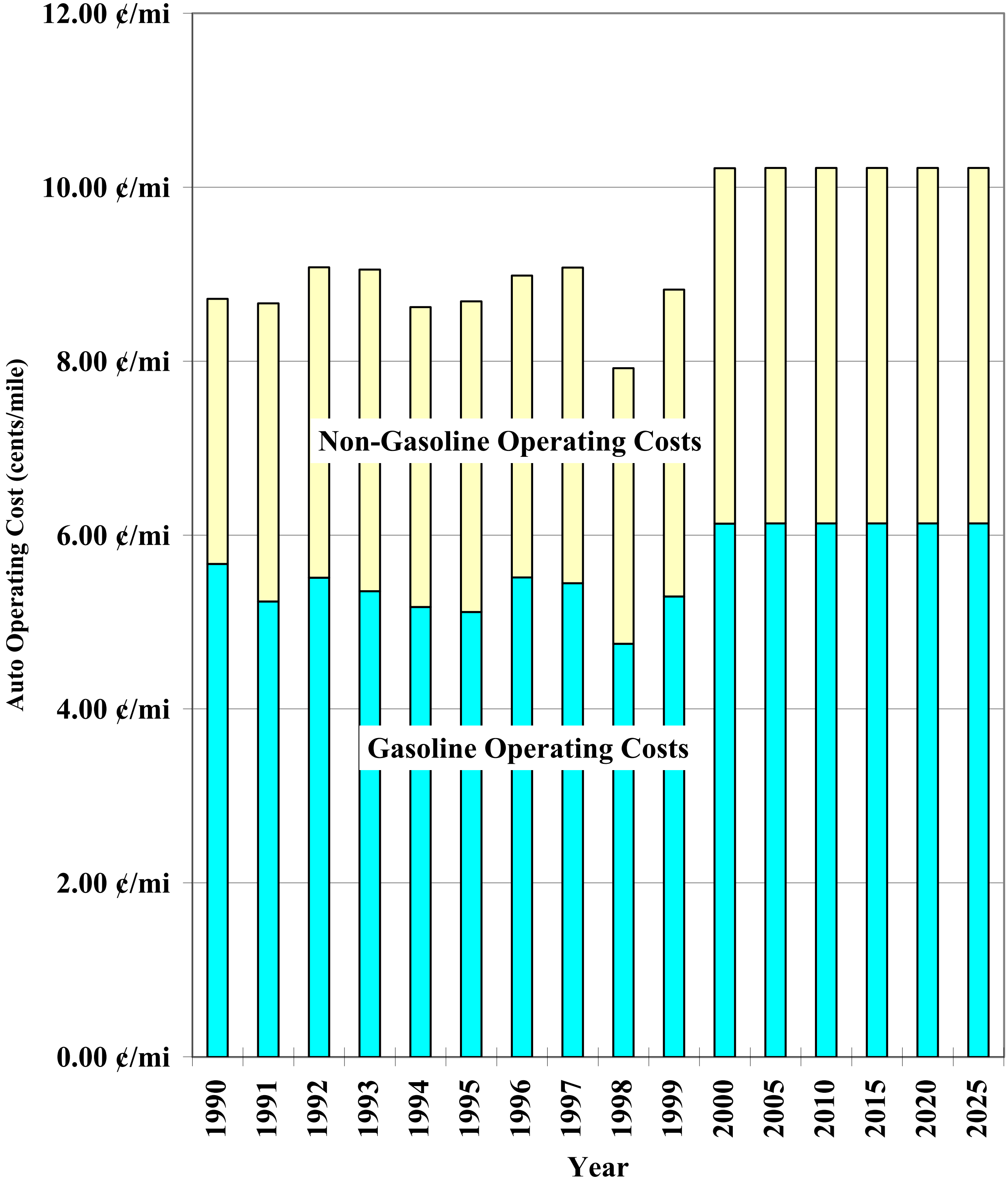

Figure 2
Gasoline Prices - 1990-2025
Current and 1990 Constant Dollars

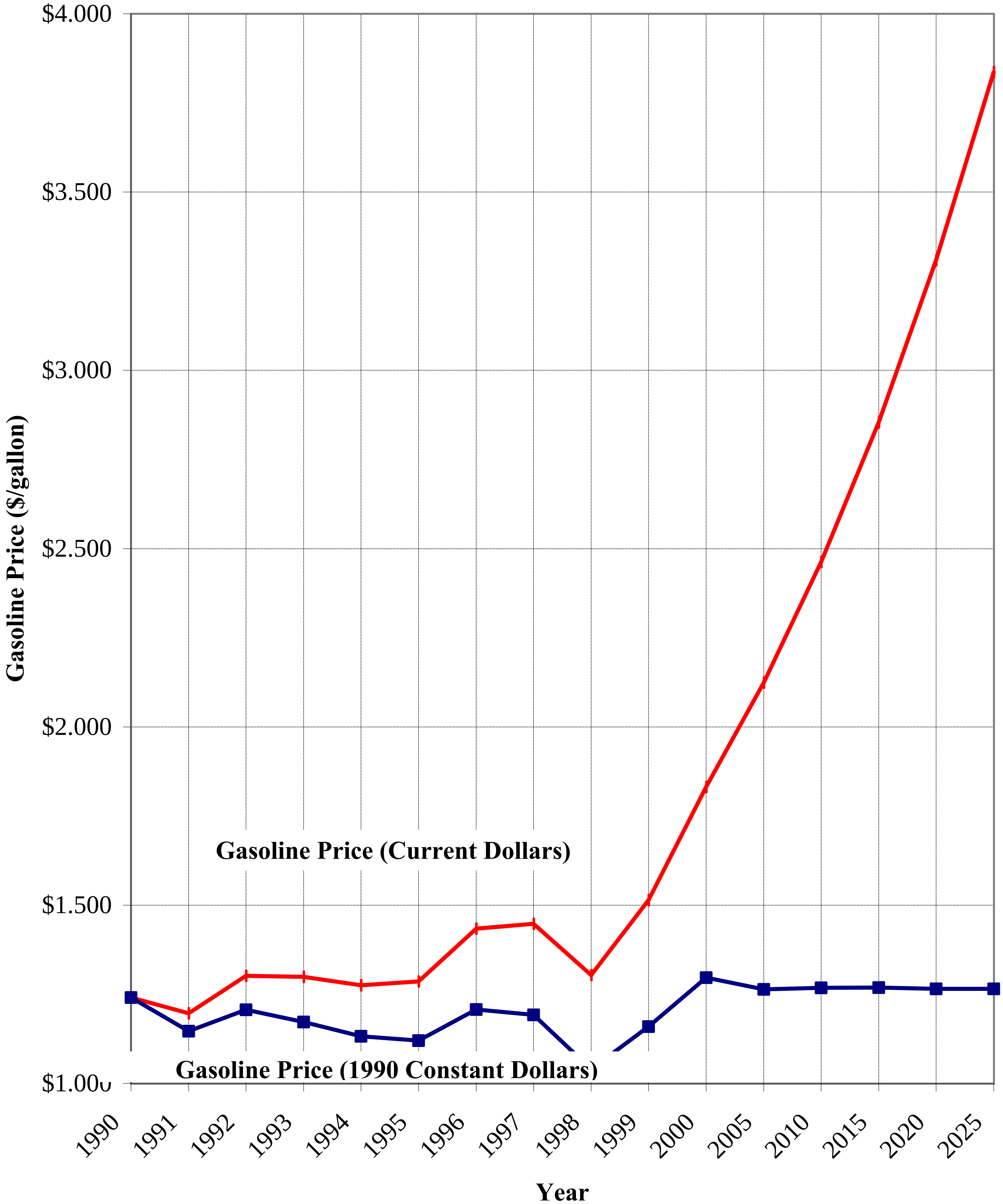

Table 4
Impact of Inflation on Bay Bridge Tolls, 1975 - 2025

Year	CPI-U All Items	San Francisco/Oakland Bay Bridge Toll (current $)	(1990 $)
1975	159.1	50¢	127.6¢
1976	168.0	50¢	120.8¢
1977	180.8	75¢	168.4¢
1978	197.8	75¢	153.9¢
1979	214.6	75¢	141.9¢
1980	247.3	75¢	123.1¢
1981	279.0	75¢	109.1¢
1982	300.0	75¢	101.5¢
1983	302.5	75¢	100.7¢
1984	319.8	75¢	95.2¢
1985	333.1	75¢	91.4¢
1986	343.2	75¢	88.7¢
1987	354.7	75¢	85.8¢
1988	370.4	75¢	82.2¢
1989	388.5	100¢	104.5¢
1990	406.0	100¢	100.0¢
1991	423.9	100¢	95.8¢
1992	438.1	100¢	92.7¢
1993	449.9	100¢	90.2¢
1994	457.1	100¢	88.8¢
1995	466.0	100¢	87.1¢
1996	482.3	100¢	84.2¢
1997	493.0	100¢	82.4¢
1998	508.8	200¢	159.6¢
1999	530.2	200¢	153.1¢
2000	553.9	200¢	146.6¢
2001	570.5*	200¢	142.3¢
2002	587.6*	200¢	138.2¢
2003	605.3*	200¢	134.2¢
2004	623.4*	200¢	130.2¢
2005	642.1*	200¢	126.5¢
2006	661.4*	200¢	122.8¢
2007	681.2*	200¢	119.2¢
2008	701.7*	200¢	115.7¢
2009	722.7*	200¢	112.4¢
2010	744.4*	200¢	109.1¢
2011	766.7*	200¢	105.9¢
2012	789.7*	200¢	102.8¢
2013	813.4*	200¢	99.8¢
2014	837.8*	200¢	96.9¢
2015	863.0*	200¢	94.1¢
2016	888.8*	200¢	91.4¢
2017	915.5*	200¢	88.7¢
2018	943.0*	200¢	86.1¢
2019	971.3*	200¢	83.6¢
2020	1000.4*	200¢	81.2¢
2021	1030.4*	200¢	78.8¢
2022	1061.3*	200¢	76.5¢
2023	1093.2*	200¢	74.3¢
2024	1126.0*	200¢	72.1¢
2025	1159.7*	200¢	70.0¢

* Assumes 3% per year annual inflation
Assume Toll Increases in Year 1998 ($2.00) and continuation of $2.00 toll to 2038.

Figure 3
Bay Bridge Tolls
1990 and Current Dollars

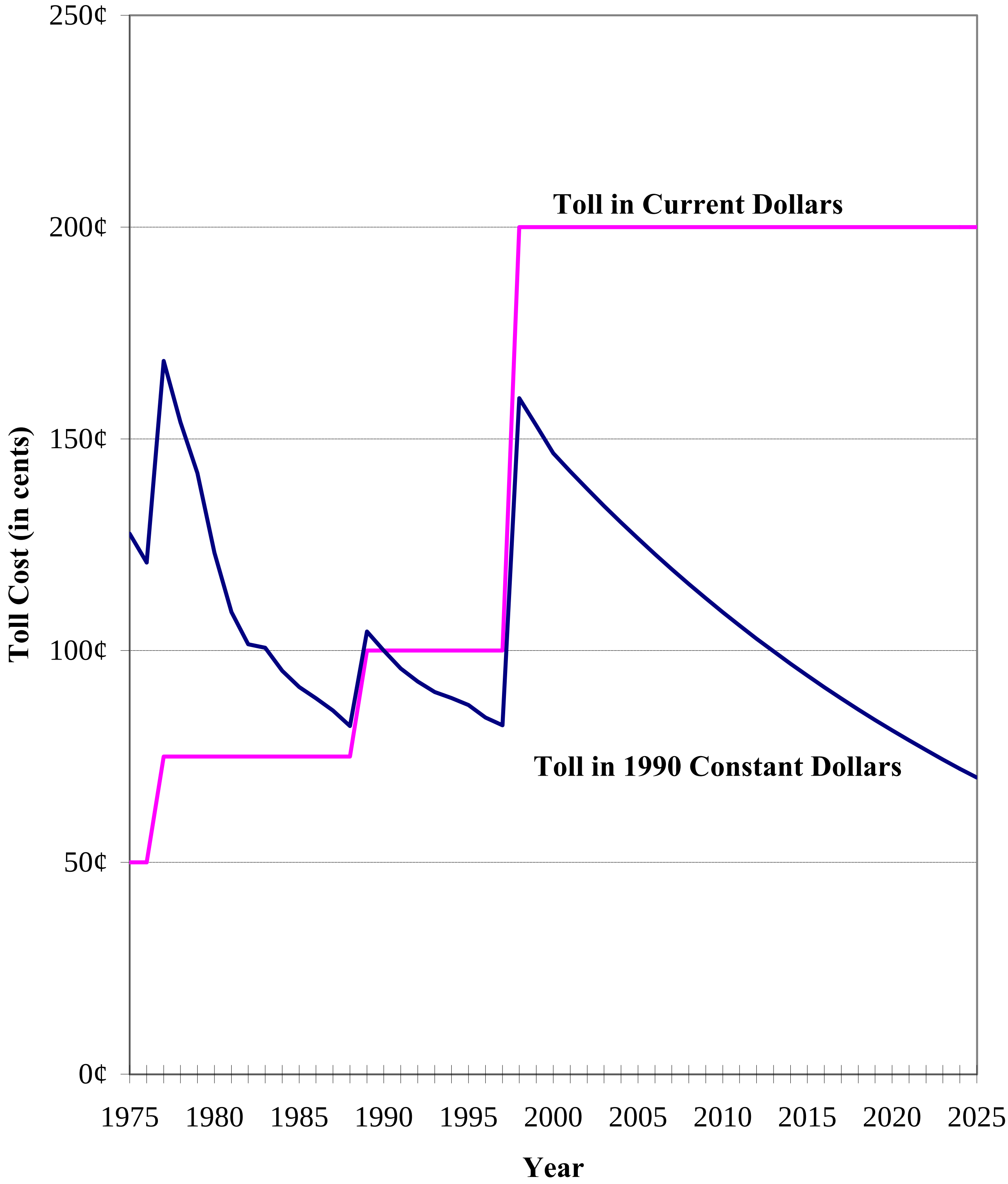

Table 5
History of Transit Fares in Bay Area, 1970-1998

	MUNI	AC Transit	BART Trains	BART Bus	SCVTA	SamTrans	GGBHTD Bus	GGBHTD Ferry	CalTrain	CCCTA	Vallejo Bus	Vallejo Ferry	AMTRAK	Napa Valley
1970														
Base	$ 0.25	$ 0.25				n.a.	n.a.	$ 0.50	$ 0.33			n.a.		
High		$ 0.80							$ 0.67					
1975														
Base	$ 0.25	$ 0.30	$ 0.25	$ 0.25	$ 0.25	n.a.	$ 0.35	$ 0.50	$ 0.35	n.a.	$ 0.25	n.a.		
High		$ 1.40	$ 1.45	$ 0.50			$ 1.50		$ 0.71					
1980														
Base	$ 0.50	$ 0.50	$ 0.35		$ 0.35	$ 0.25	$ 0.35	$ 1.50	$ 0.71	$ 0.25	$ 0.35	n.a.		
High		$ 1.50	$ 1.50		$ 0.75	$ 1.25	$ 2.50	$ 2.00	$ 1.47	$ 0.50				
1985														
Base	$ 0.60	$ 0.60	$ 0.60	$ 0.60	$ 0.60	$ 0.35	$ 1.00	$ 2.10	$ 0.86	$ 0.60		n.a.		
High		$ 1.75	$ 2.15	$ 0.90	$ 1.00	$ 1.35	$ 3.30	$ 2.50	$ 1.80					
1990														
Base	$ 0.85	$ 1.00	$ 0.80	$ 0.75	$ 0.75	$ 0.50			$ 0.86	$ 0.60				n.a.
High	$ 2.00	$ 2.00	$ 3.00	$ 1.15	$ 1.00	$ 1.95			$ 1.92					
1995														
Base	$ 1.00	$ 1.25	$ 0.90		$ 1.10	$ 1.00	$ 1.25		$ 0.73	$ 1.00	$ 1.00	$ 6.36		$ 1.00
High	$ 2.00	$ 2.20	$ 3.55		$ 2.25	$ 2.50	$ 4.50		$ 3.64	$ 1.25	$ 2.00			$ 2.50
1996														
Base			$ 1.00		$ 1.10		$ 1.25	$ 2.50						
High			$ 4.00		$ 2.25		$ 4.50	$ 4.25						
1997														
Base			$ 1.10	$ 1.10					$ 0.77					
High			$ 4.70	$ 1.65					$ 3.83					
1998														
Base									$ 0.80			$ 3.33		
High									$ 4.02					

MUNI : High fare is for cable cars.
Benicia: High fare is for patrons travelling between Vallejo and Contra Costa County
Vallejo Ferry is monthly pass divided by 42 rides.
SamTrans: High fare is for all express routes, except 1F/19F
Oakland/Alameda Ferry: Prices are per trip cost of 10-ticket book (1990)

Table 5 (continued)
History of Transit Fares in Bay Area, 1970-1998

	Napa City	Tri-Delta	Benicia	Union City	LAVTA	30-Z	DB	WestCat	CityCoach (Vaca)	Flyer (Fairfld)	Oak/Ala Ferry	Sta Rosa City Bus	Sonoma County	Petaluma
1970														
Base														
High														
1975														
Base	$ 0.25	$ 0.25										$ 0.25		$ 0.25
High														
1980														
Base	$ 0.35	$ 0.25			$ 0.50			$ 0.60				$ 0.35	$ 0.35	
High														
1985														
Base		$ 0.50		$ 0.50		$ 0.60	$ 1.25					$ 0.60		
High						$ 0.85	$ -							
1990														
Base	$ 0.60	$ 0.60	$ 0.75	$ 0.75	$ 0.60	$ 1.00	$ 0.75	$ 0.75	$ 0.75	$ 0.75	$ 2.50			
High			$ 1.50				$ 1.50							
1995														
Base	$ 0.75	$ 0.75	$ 0.75	$ 0.75	$ 1.00			$ 0.75				$ 0.85	$ 1.05	$ 1.05
High			$ 1.50											
1996														
Base		$ 0.75												
High														
1997														
Base							$ 0.75				$ 2.75	$ 1.00		
High							$ 1.75							
1998														
Base							$ 1.00							
High							$ 2.00							

MUNI : High fare is for cable cars.
Benicia: High fare is for patrons travelling between Vallejo and Contra Costa County
Vallejo Ferry is monthly pass divided by 42 rides.
SamTrans: High fare is for all express routes, except 1F/19F
Oakland/Alameda Ferry: Prices are per trip cost of 10-ticket book (1990)

Figure 4.1
San Francisco Municipal Railway (Muni)
Base Fare: Historical and Projected

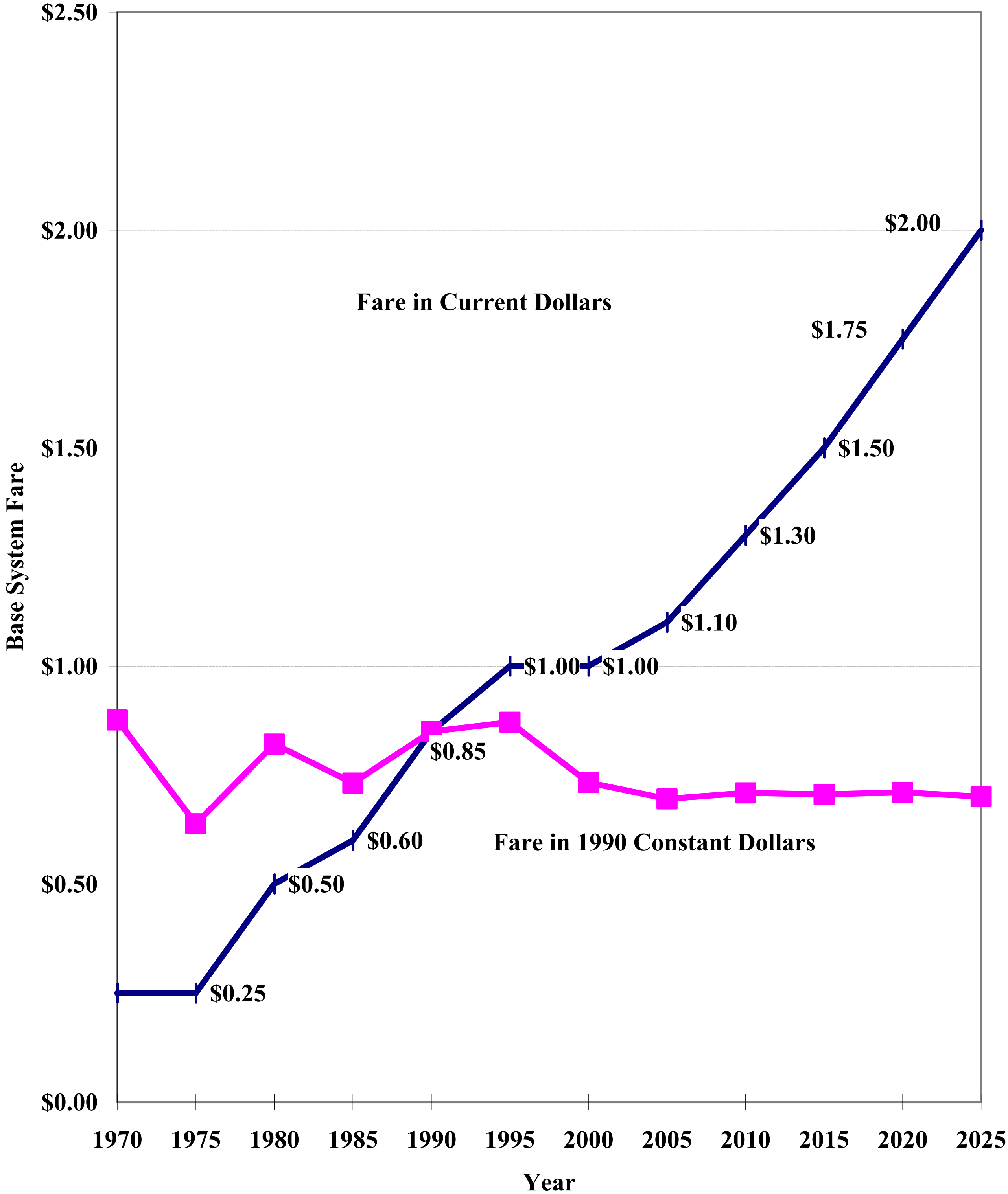

Figure 4.2
A.C. Transit District
Base Fare: Historical and Projected

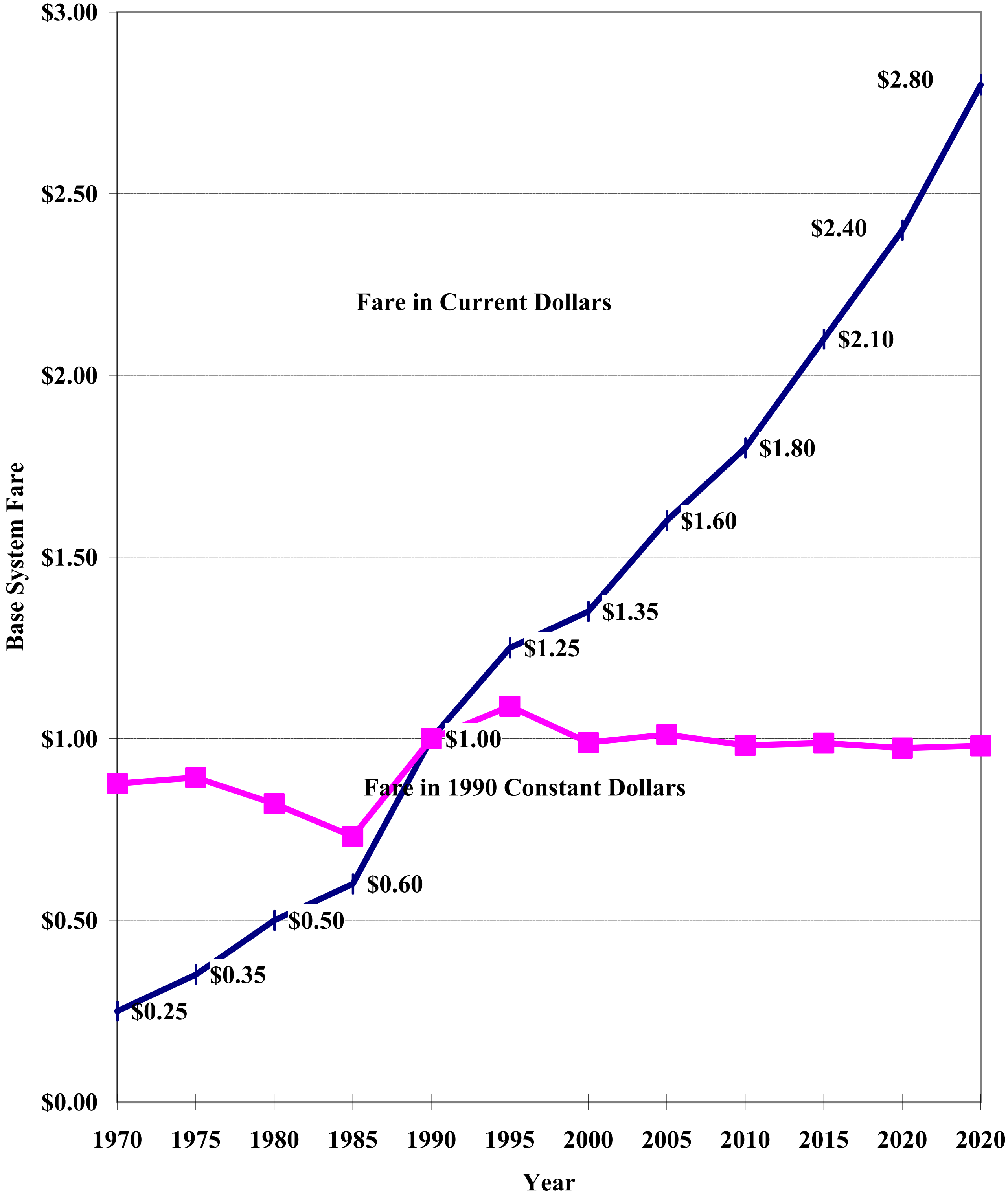

Figure 4.3
Bay Area Rapid Transit District (BART)
Base Fare: Historical and Projected

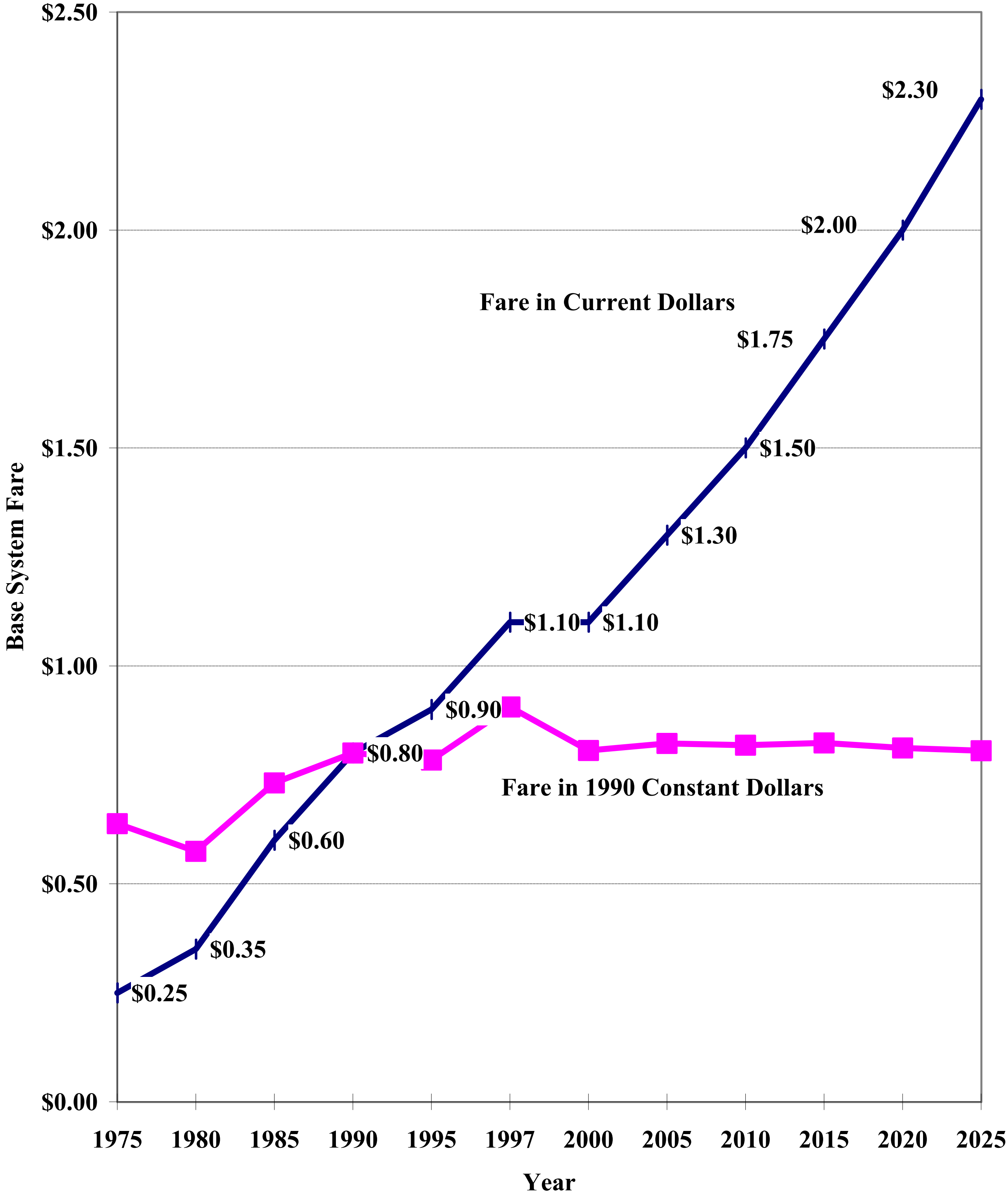

Table 6.1
Regional Highway Peaking Factors for AM and PM Peak Hours
"Old-Style" MTCFCAST Model System

AM/PM Peak Hour Trip Purpose	Trip Direction	1965 Survey	1981 Survey	1990 Survey	All Forecasts
AM Peak Hour Factors					
Home-Based Work Weighted Average	H –> W	0.17021	0.15656	0.15436	NA
	W –> H	0.00462	0.00483	0.00329	NA
Home-Based Non-Work	H –> NW	0.03162	0.04146	0.05319	0.04476
	NW –> H	0.01261	0.01459	0.01549	0.01576
Non-Home-Based	NW –> NW	0.02077	0.02404	0.02797	0.02404
HBW Drive Alone	H –> W	NA	0.14597	0.14418	0.14597
	W –> H	NA	0.00514	0.00352	0.00514
HBW Shared Ride 2+	H –> W	NA	0.17763	0.18514	0.17763
	W –> H	NA	0.00172	0.00158	0.00172
PM Peak Hour Factors					
Home-Based Work Weighted Average	H –> W	0.00686	0.00801	0.00788	NA
	W –> H	0.15601	0.12637	0.12533	NA
Home-Based Non-Work	H –> NW	0.03162	0.03528	0.02769	0.03626
	NW –> H	0.05506	0.06155	0.05050	0.06325
Non-Home-Based	NW –> NW	0.08814	0.08388	0.08207	0.08388
HBW Drive Alone	H –> W	NA	0.00790	0.00837	0.00790
	W –> H	NA	0.12661	0.12612	0.12661
HBW Shared Ride 2+	H –> W	NA	0.00857	0.00661	0.00857
	W –> H	NA	0.13595	0.12066	0.13595
Bay Bridge Spread Peak Factor		NA	NA	NA	0.62000
Ala/SC Spread Peak Factor		NA	NA	NA	0.70000

Table 6.2
Regional Highway Peaking Factors for AM and PM Peak Periods
"New-Style" BAYCAST Model System

AM/PM Peak Period Trip Purpose	Trip Direction	1990 Survey	All Forecasts
AM Peak Period Factors (0700-0900)			
Home-Based Work	H –> W	*0.26974 **	*0.26974 **
Weighted Average	W –> H	0.00661	0.00661
Home-Based Non-Work	H –> NW	0.06662	0.06662
(HBSH, HBSR)	NW –> H	0.02719	0.02719
Home-Based School	H –> School	0.28402	0.28402
	School –> H	0.01141	0.01141
Non-Home-Based	NW –> NW	0.05679	0.05679
HBW Drive Alone	H –> W	*0.25530 **	*0.25530 **
	W –> H	0.00707	0.00707
HBW Shared Ride 2+	H –> W	*0.31213 **	*0.31213 **
	W –> H	0.00421	0.00421
PM Peak Period Factors (1600-1800)			
Home-Based Work	H –> W	0.01584	0.01584
Weighted Average	W –> H	0.20792	0.20792
Home-Based Non-Work	H –> NW	0.06230	0.06230
(HBSH, HBSR)	NW –> H	0.10329	0.10329
Home-Based School	H –> School	0.02684	0.02684
	School –> H	0.05724	0.05724
Non-Home-Based	NW –> NW	0.14901	0.14901
HBW Drive Alone	H –> W	0.01644	0.01644
	W –> H	0.20856	0.20856
HBW Shared Ride 2+	H –> W	0.01529	0.01529
	W –> H	0.20548	0.20548

** Factors for AM peak period home-to-work trips are for illustrative use only. HBW departure time choice model is used in model application.*

Table 7
Year 1990 AM Peak Period Calibration Factors ("Peak Spreading Factors"), Superdistrict-to-Superdistrict

	To:																																	
From	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**
1	--	--	--	--	0.60	0.60	0.60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2	--	--	--	--	0.60	0.60	0.60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3	--	--	--	--	0.60	0.60	0.60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4	--	--	--	--	0.60	0.60	0.60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5	0.65	0.65	0.65	0.65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6	0.65	0.65	0.65	0.65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7	0.65	0.65	0.65	0.65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8	0.70	0.70	0.70	0.70	0.30	0.30	0.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
9	0.70	0.70	0.70	0.70	0.45	0.45	0.45	--	--	--	--	--	--	--	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	--	--	--	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11	0.70	0.70	0.70	0.70	0.45	0.45	0.45	--	--	--	--	--	--	--	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15	--	--	--	--	--	--	--	--	0.70	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.80	0.80	0.80	0.80	0.80	0.80
16	--	--	--	--	--	--	--	--	0.70	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.80	0.80	0.80	0.80	0.80	0.80
17	--	--	--	--	--	--	--	--	0.70	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.80	0.80	0.80	0.80	0.80	0.80
18	--	--	--	--	--	--	--	--	0.70	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	0.70	0.70	0.70	0.70	0.70	--	--	--	--	0.80	0.80	0.80	0.80	0.80	0.80
19	--	--	--	--	--	--	--	--	0.70	0.70	0.70	0.70	0.70	0.70	--	0.40	0.40	0.40	0.40	0.70	0.70	0.70	0.70	0.70	--	--	--	--	0.80	0.80	0.80	0.80	0.80	0.80
20	0.70	0.70	0.70	0.70	0.70	0.70	0.70	--	0.70	0.70	0.70	0.70	0.70	0.70	0.80	0.32	0.32	0.32	0.32	--	--	--	--	--	--	--	--	--	0.80	0.80	0.80	0.80	0.80	0.80
21	0.70	0.70	0.70	0.70	0.70	0.70	0.70	--	0.70	0.70	0.70	0.70	0.70	0.70	0.48	0.80	0.80	0.80	0.80	--	--	--	--	--	--	--	--	--	0.80	0.80	0.80	0.80	0.80	0.80
22	0.70	0.70	0.70	0.70	0.70	0.70	0.70	--	0.70	0.70	0.70	0.70	0.70	0.70	0.48	0.80	0.80	0.80	0.80	--	--	--	--	--	--	--	--	--	0.80	0.80	0.80	0.80	0.80	0.80
23	0.70	0.70	0.70	0.70	0.70	0.70	0.70	--	0.70	0.70	0.70	0.70	0.70	0.70	0.48	0.80	0.80	0.80	0.80	--	--	--	--	--	--	--	--	--	0.80	0.80	0.80	0.80	0.80	0.80
24	0.70	0.70	0.70	0.70	0.70	0.70	0.70	--	0.70	0.70	0.70	0.70	0.70	0.70	0.48	0.80	0.80	0.80	0.80	--	--	--	--	--	--	--	--	--	0.80	0.80	0.80	0.80	0.80	0.80
25	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.62	0.70	0.70	0.70	0.70	0.70	0.62	0.62	0.62	0.62	--	--	--	--	0.50	0.50	0.50	--	--	--
26	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.62	0.70	0.70	0.70	0.70	0.70	0.62	0.62	0.62	0.62	--	--	--	--	0.50	0.50	0.50	--	--	--
27	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.62	0.70	0.70	0.70	0.70	0.70	0.62	0.62	0.62	0.62	0.40	0.40	--	--	--	--	--	0.40	0.40	0.40
28	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.62	0.70	0.70	0.70	0.70	0.70	0.62	0.62	0.62	0.62	0.40	0.40	--	--	--	--	--	0.40	0.40	0.40
29	0.70	0.70	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.40	0.40	--	--	--	--	--	0.40	0.40	0.40
30	0.70	0.70	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.40	0.40	--	--	--	--	--	0.40	0.40	0.40
31	0.70	0.70	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.40	0.40	--	--	--	--	--	0.40	0.40	0.40
32	0.70	0.70	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	--	--	--	--	--	--	--	--	--	--
33	0.70	0.70	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	--	--	--	--	--	--	--	--	--	--
34	0.70	0.70	0.70	0.70	0.70	0.70	0.70	--	--	--	--	--	--	--	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	--	--	--	--	--	--	--	--	--	--

Table 8
Regional Work and Non-Work Trip Vehicle Occupancies
Historical and Projected

	Household Surveys			Model Simulation	
Trip Purpose	1965	1981	1990	1990	2025
Home-Based Work	1.180	1.129	1.095†	1.097*	1.100*
Home-Based Shop	1.443	1.241	1.416§	1.423*	1.414*
Home-Based Social / Rec	1.813	1.730	1.584§	1.582*	1.583*
Home-Based School	2.782	2.234	2.373§		
Home-Based Grade School			NA	NA	NA
Home-Based High School			3.205§	4.200*	3.970*
Home-Based College			1.164§	1.261*	1.331*
Non-Home-Based	1.445	1.254	1.206§	1.207*	1.253*
Total Trips	1.440	1.303	1.299§	1.328*	1.325*

1965, 1981 and 1990 vehicle occupancy rates derived from household travel surveys.
** Regional Model Simulation using BAYCAST system, not assumed.*
† Source: 1990 Census-based Observed Home-Based Work trips.

Standard Vehicle Occupancy Assumptions:
Drive Alone = 1.0 persons per vehicle
Shared Ride 2 = 2.0 persons per vehicle
Shared Ride 3+ = 3.5 persons per vehicle

Note: The vehicle occupancy rates for home-based shop and social/recreation trips are based on vehicle driver vs. vehicle passenger data from the 1965 and 1981 surveys. For the 1990 survey, the vehicle occupancy rates are based on drive alone, shared ride 2 and shared ride 3+ data. The vehicle occupancy data from the three household survey datasets are not strictly comparable, given the incomplete information on vehicle occupants obtained from household travel surveys.

Table 9
Ratio of Gas Prices in San Francisco and Los Angeles

		San Francisco	Los Angeles	Ratio SF/LA	Difference SF - LA
January	1995	$1.283	$1.352	0.95	-$0.069
February	1995	$1.279	$1.336	0.96	-$0.057
March	1995	$1.264	$1.323	0.96	-$0.059
April	1995	$1.267	$1.328	0.95	-$0.061
May	1995	$1.297	$1.347	0.96	-$0.050
June	1995	$1.324	$1.349	0.98	-$0.025
July	1995	$1.310	$1.315	1.00	-$0.005
August	1995	$1.290	$1.282	1.01	$0.008
September	1995	$1.274	$1.253	1.02	$0.021
October	1995	$1.284	$1.245	1.03	$0.039
November	1995	$1.279	$1.242	1.03	$0.037
December	1995	$1.269	$1.227	1.03	$0.042
January	1996	$1.281	$1.237	1.04	$0.044
February	1996	$1.288	$1.250	1.03	$0.038
March	1996	$1.334	$1.299	1.03	$0.035
April	1996	$1.475	$1.437	1.03	$0.038
May	1996	$1.616	$1.599	1.01	$0.017
June	1996	$1.592	$1.547	1.03	$0.045
July	1996	$1.568	$1.491	1.05	$0.077
August	1996	$1.527	$1.389	1.10	$0.138
September	1996	$1.468	$1.328	1.11	$0.140
October	1996	$1.413	$1.273	1.11	$0.140
November	1996	$1.331	$1.213	1.10	$0.118
December	1996	$1.288	$1.258	1.02	$0.030
January	1997	$1.357	$1.307	1.04	$0.050
February	1997	$1.421	$1.325	1.07	$0.096
March	1997	$1.439	$1.388	1.04	$0.051
April	1997	$1.513	$1.446	1.05	$0.067
May	1997	$1.486	$1.427	1.04	$0.059
June	1997	$1.445	$1.392	1.04	$0.053
July	1997	$1.397	$1.353	1.03	$0.044
August	1997	$1.427	$1.444	0.99	-$0.017
September	1997	$1.501	$1.534	0.98	-$0.033
October	1997	$1.499	$1.503	1.00	-$0.004
November	1997				
December	1997				
1995/97 Average		**$1.385**	**$1.354**	**1.023**	**$0.031**
1995/97 Std. Dev.		**$0.108**	**$0.100**	**0.043**	**$0.057**

Table 10
Tolls on Bay Area Bridges, 2000-2025

Bridge	Toll (Current $)	Year 2000 (1990 $)	Year 2010 (1990 $)	Year 2020 (1990 $)	Year 2025 (1990 $)
Benicia-Martinez	$2.00	$1.47	$1.09	$0.81	$0.70
Carquinez	$2.00	$1.47	$1.09	$0.81	$0.70
Richmond-San Rafael	$2.00	$1.47	$1.09	$0.81	$0.70
Golden Gate	$3.00	$2.20	$1.64	$1.22	$1.05
San Francisco-Oakland Bay	$2.00	$1.47	$1.09	$0.81	$0.70
San Mateo-Hayward	$2.00	$1.47	$1.09	$0.81	$0.70
Dumbarton	$2.00	$1.47	$1.09	$0.81	$0.70
Antioch	$2.00	$1.47	$1.09	$0.81	$0.70
Consumer Price Index	1990=406.0	553.9	744.4	1000.4	1159.7
Ratio of 1990 CPI to Future Year CPI:		0.7330	0.5454	0.4058	0.3501

Table 11
Speed/Capacity Table (With Post-Processing Speeds)
San Francisco Bay Area Regional Highway Networks

Area Type	**Facility Type**								Speed Class*	
	Frwy-to-Frwy (1)	Freeway (2)	Expwy (3)	Collector (4)	Fwy Ramp (5)	Dummy (6)	Major Arterial (7)	Metered Ramp (8)	Special (9)	Special (10)
Core (0)	1,700	1,850	1,300	550	1,300	N.A.	800	700	1,900 (A)	1,350 (G)
	40	55	40 (25)	10 (5)	30 (25)		20 (15)	25 (20)	55	40 (25)
CBD (1)	1,700	1,850	1,300	600	1,300	N.A.	850	700	1,950 (B)	1,500 (H)
	40	55	40 (25)	15 (10)	30 (25)		25 (20)	25 (20)	60	45 (30)
UBD (2)	1,750	1,900	1,450	650	1,400	N.A.	900	800	2,000 (C)	1,530 (I)
	45	60	45 (30)	20 (15)	35 (30)		30 (25)	30 (25)	65	55 (40)
Urban (3)	1,750	1,900	1,450	650	1,400	N.A.	900	800	1,780 (D)	900 (J)
	45	60	45 (30)	25 (20)	35 (30)		30 (25)	30 (25)	50	25 (20)
Suburb.(4)	1,800	1,950	1,500	800	1,400	N.A.	950	900	1,800 (E)	950 (K)
	50	65	50 (35)	30 (25)	40 (35)		35 (30)	35 (30)	45	30 (25)
Rural (5)	1,800	1,950	1,500	850	1,400	N.A.	950	900	1,840 (F)	980 (L)
	50	65	55 (40)	35 (30)	40 (35)		40 (35)	35 (30)	50	40 (35)

Upper Entry: Capacity at Level of Service "E" in vehicles per hour per lane, i.e., ultimate capacity

Lower Entry: Free-Flow Speed (miles per hour)

* Speed Class = (Area Type * 10) + Facility Type

N.A. = Not Applicable

Notes:

(A) TOS Fwy (AT=0,1); (B) TOS Fwy (AT=2,3); (C) TOS Fwy (AT=4,5); (D) Golden Gate; (E) TOS Fwy-to-Fwy (AT=0-3); (F) TOS Fwy-to-Fwy (AT=4,5)

(G) Expwy TOS (AT=0,1); (H) Expwy TOS (AT=2,3); (I) Expwy TOS (AT=4,5); (J) Art.Sig.Coor. (AT=0,1); (K) Art.Sig.Coor. (AT=2,3); (L) Art.Sig.Coor. (AT=4,5)

Speed values in parentheses are used in MTC speed post-processing routine.

Table 12
Distribution of Average Weekday Daily Vehicle Miles of Travel (VMT)
by Average Link Speed (mph)
(13 Speed Cohorts used in ARB BURDEN Models)

		1998 Base Year		2010 Intermediate Year		2025 RTP Project	
	Speed Cohort	VMT	% of Total	VMT	% of Total	VMT	% of Total
1	< 7.5 mph	298,127	0.23%	474,213	0.29%	961,118	0.50%
2	7.5 - 12.5 mph	665,901	0.52%	1,313,303	0.80%	3,340,600	1.75%
3	12.5 - 17.5 mph	6,898,801	5.37%	9,711,410	5.93%	12,365,345	6.49%
4	17.5 - 22.5 mph	7,037,531	5.48%	9,526,100	5.82%	13,228,835	6.94%
5	22.5 - 27.5 mph	16,240,227	12.65%	19,734,795	12.06%	24,453,381	12.83%
6	27.5 - 32.5 mph	13,354,047	10.40%	18,470,151	11.29%	20,711,967	10.87%
7	32.5 - 37.5 mph	10,683,363	8.32%	13,929,995	8.51%	17,594,278	9.23%
8	37.5 - 42.5 mph	5,212,176	4.06%	7,026,185	4.29%	9,332,457	4.90%
9	42.5 - 47.5 mph	6,112,561	4.76%	8,962,191	5.48%	10,407,492	5.46%
10	47.5 - 52.5 mph	5,949,564	4.63%	6,724,680	4.11%	6,675,930	3.50%
11	52.5 - 57.5 mph	6,086,036	4.74%	8,244,622	5.04%	6,011,440	3.15%
12	57.5 - 62.5 mph	26,016,616	20.27%	29,288,993	17.90%	32,051,431	16.82%
13	> 62.5 mph	23,818,456	18.55%	30,262,582	18.49%	33,456,341	17.55%
	TOTAL	128,373,407	100.00%	163,669,221	100.00%	190,590,615	100.00%

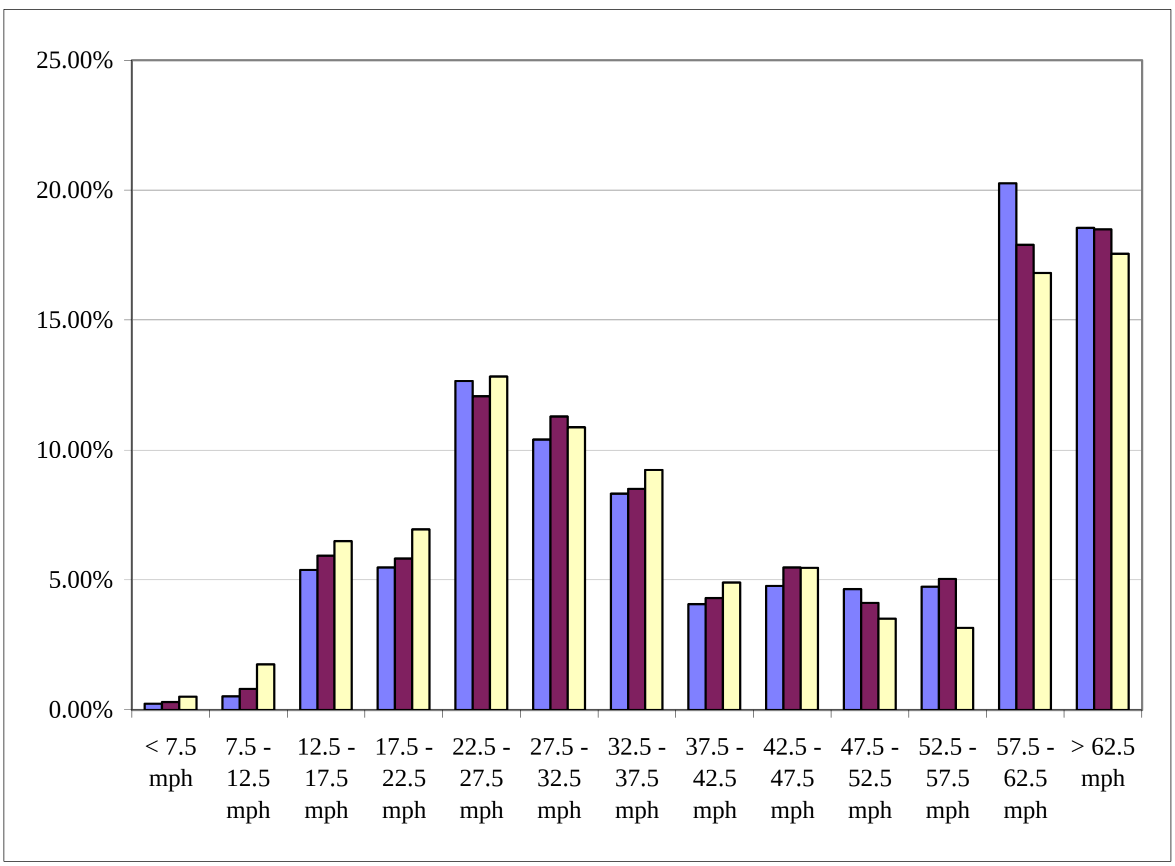

Table 13
Changes in Transit Operator Base Fares, 1998 to 2001

Operator	1998 Fare	2001 Fare	Percent Change	Date of Change
Muni	$1.00	$1.00	0.0%	1995
BART	$1.10	$1.10	0.0%	1997
AC Transit	$1.25	$1.35	8.0%	10/1/1999
SCVTA-Local	$1.10	$1.25	13.6%	7/1/1999
SCVTA-Express	$1.75	$2.00	14.3%	7/1/1999
SamTrans	$1.00	$1.10	10.0%	8/15/1999
Golden Gate (Marin)	$1.25	$1.50	20.0%	7/1/1999
Golden Gate (Sonoma)	$1.75	$2.15	22.9%	7/1/2000
Caltrain	$1.11	$1.11	0.0%	1998
CCCTA	$1.00	$1.25	25.0%	9/1/1997
Vallejo	$1.00	$1.25	25.0%	1/1/2000
Tri-Delta	$0.75	$0.75	0.0%	7/1/1997
WHEELS (LAVTA)	$1.00	$1.00	0.0%	1995

Notes:

1. For the 1998 RTP, fares as of February 1998 were used. For the 2001 RTP, fares as of May 2001 were used.
2. Transit fares are from MTC records, and the Web site: http://www.transitinfo.org/
3. Caltrain fares are based on a 10-ride ticket book.
4. LAVTA increased adult fares to $1.25 on 11/1/01.
4. Golden Gate Transit fares shown are for intra-Marin and intra-Sonoma counties. Golden Gate Transit District increased fares on an annual basis between 1999-2001. The fare increases of 7/1/00 were used in the 2001 RTP.